

CLAIMS

WE CLAIM:

- 5 1. An integrated circuit fabricated on a single substrate comprising:
 a data bus;
 purpose-specific functional units operatively connected to said data bus, said
functional units comprising:
 a halftoner; and
10 a printhead interface; and
 a general-purpose processor operatively connected to said data bus for controlling
said functional units, wherein said processor is operative to run software that coordinates
said functional units to print pages.
- 15 2. An integrated circuit according to claim 1, wherein said processor is operative to
print pages in streaming mode.
3. An integrated circuit according to claim 1, wherein said processor is operative to
print pages in single-page mode when the size of said received pages exceeds a memory
20 threshold.
4. An integrated circuit according to claim 3, wherein said memory threshold is 3MB.
5. An integrated circuit according to claim 1, wherein said halftoner is operative to
25 halftone contone color data to a bi-level color layer, and then to composit a bi-level black
layer over said bi-level color layer.
6. An integrated circuit according to claim 1, wherein said halftoner is operative to
halftone contone CMYK data to a bi-level CMYK layer, and then to composit a bi-level
30 black layer over said bi-level CMYK layer.

7. An integrated circuit according to claim 1, wherein said processor is operative to transfer bi-level color data to said printhead interface at a constant required rate.
8. An integrated circuit according to claim 1, further comprising a multi-channel DMA
5 controller operatively connected to said data bus, wherein each of said functional units further comprises one or more on-chip input and/or output FIFOs, and wherein each FIFO is allocated a separate channel in said multi-channel DMA controller.
9. An integrated circuit according to claim 8, wherein said DMA controller is operative
10 to interrupt said processor when a data transfer is complete.
10. An integrated circuit according to claim 1, wherein said halftoner is operative to consume black and contone data according to specified black and contone page widths and output scaled data to said printhead interface.
- 15
11. An integrated circuit according to claim 1, wherein said printhead interface comprises:
a line loader/format unit; and
a Memjet interface operatively connected to said line loader/format unit; wherein
20 said Memjet interface transfers data to a Memjet printhead.
12. An integrated circuit according to claim 11, wherein said line loader/format unit is operative to load dots for a given print line into local buffer storage and format said dots into an order required for said Memjet printhead.

25

30